City Leadership in 'Going Solar'

US DOE Solar America Cities
First Annual Conference

April 15, 2008

Solar Generation and Materiality

- 60% growth per annum in U.S. solar industry since 2001
- The solar industry exceeds $16B per year – equal to the global wind industry
- Solar enjoys more uniform support from the general public than any other technology
- As a distributed resource, solar generates more jobs that any other renewable energy technology per MWh
- **50% p.a. increase in solar capacity *additions* yields 65 GW**
  - ~20% of incremental US capacity over the next 10 years
  - Critical to achieve zero net incremental GHG production from electric utilities

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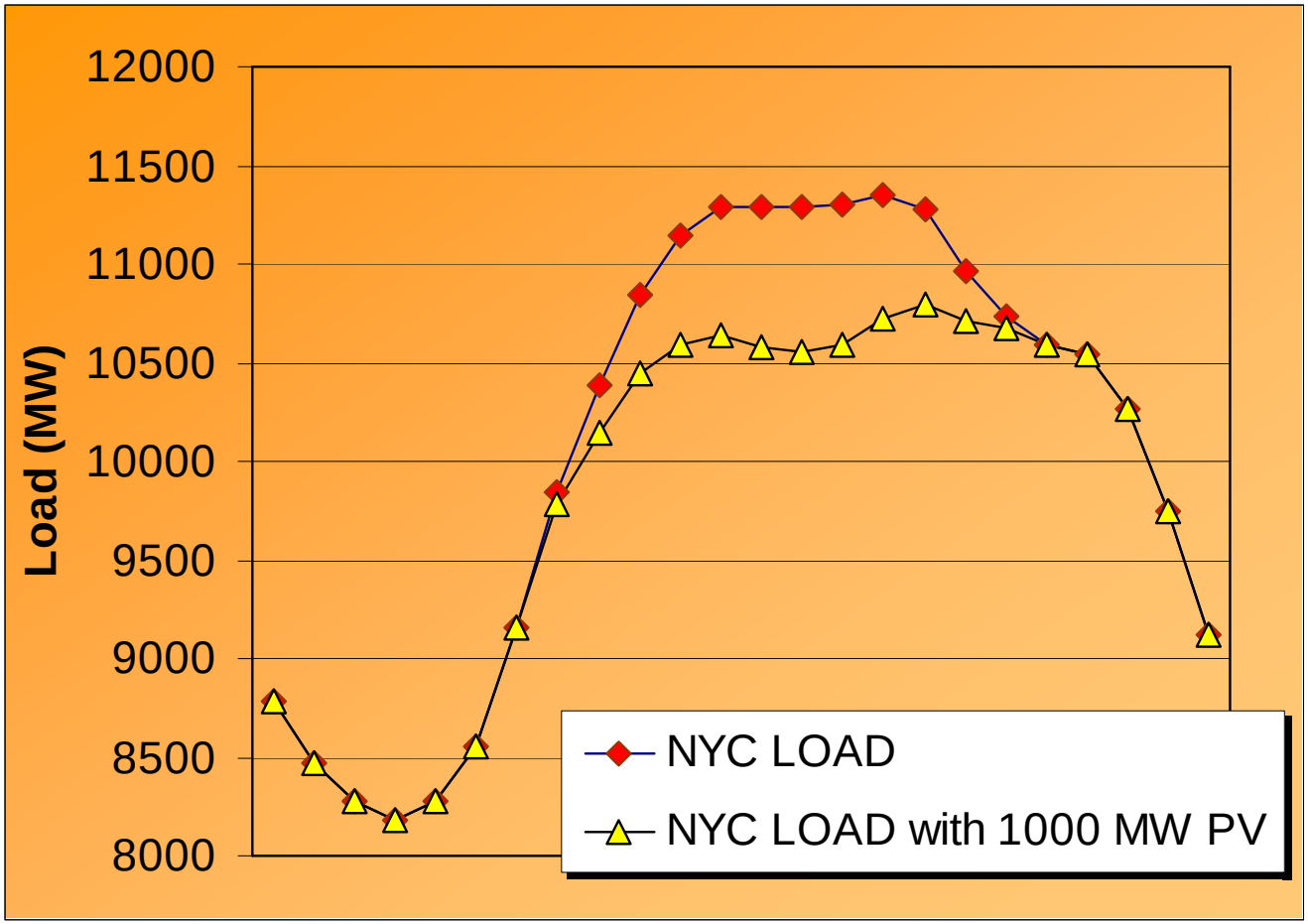
Solar Reliability

Summer 2006 peak demand day - New York City



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Societal Demand for Solar

- **Utility companies have experienced ratepayer dissatisfaction**
  - Increasing and volatile rates
    - » $160B costs predicted for transmission expansion
    - » 9.3% rate increases in 2006, above average every year since 2001
    - » GHG reductions (carbon credits of $20/ton would add 2 cents/kWh)
  - Unreliable supplies cost U.S. ratepayers $150 billion. Consumers lose power:
    - » 214 min/yr in U.S., compared to
    - » 70 min/yr in UK and
    - » 6 min/yr in Japan
  - Electric generators are the largest polluters globally (carbon, plus…)
- **Solar enjoys more public support than any other renewable resource**
  - Approval ratings over 90% since the late 1990's
    - » Florida: 59% of residents willing to pay 25 cents or more extra per month
    - » Ohio: 89% of residents willing to pay 50 cents or more extra per month
  - Nuclear poll: 27% said "SOLAR" would be most used for electricity in 15 years
- **Solar equipment is poised to deliver material volumes to the marketplace**

…so what's next?

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How the Solar Industry is Driving Materiality

- **Technology is in place and available**
- **$40 billion invested into the solar industry since 2001**
- **Services infrastructure is developing to meet goals of materiality**
  - Investments contribute to domestic job growth versus off-shore migration
  - 65 GW of solar additions would create 455,000 job-years

- **Where are the gaps?**
  - Regulatory and market structuring
  - Finance and site aggregation
  - Registration as a renewable resource
  - Operations and dispatch

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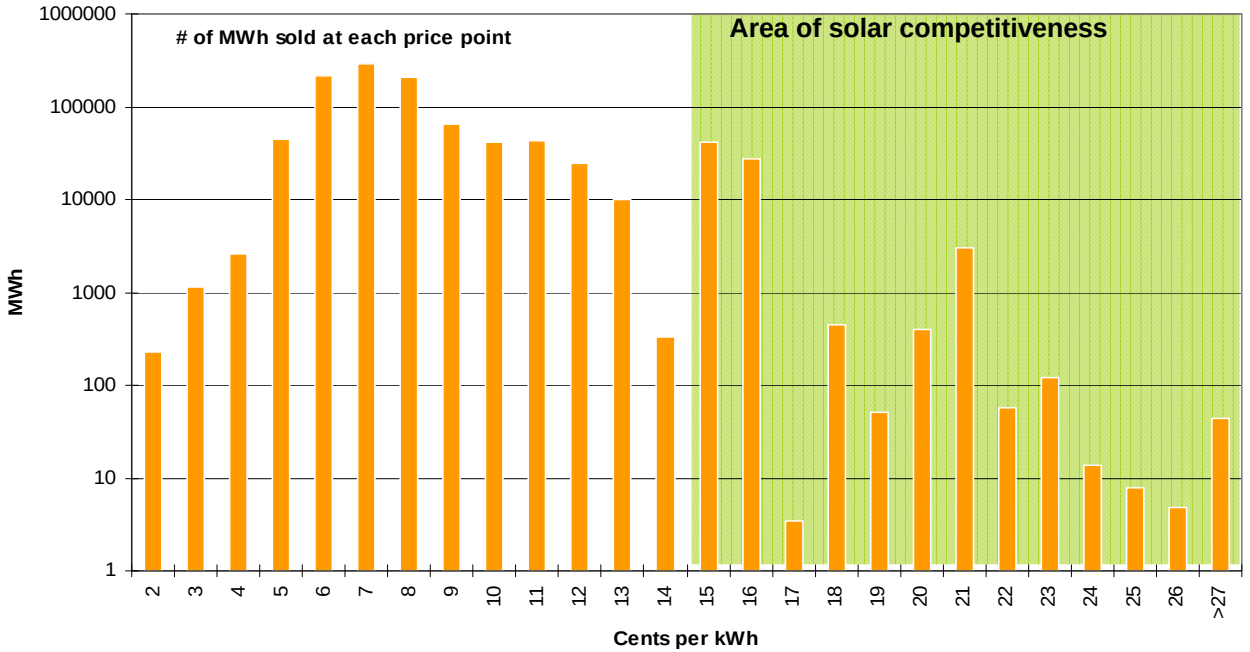
The Economics of Distributed Solar

$30 billion (approximately 10% energy) of U.S. retail electricity demand can be competitively addressed with solar power



Limitations of centralized generation

- Centralized utility planning models have reached their limits of scalability
  - Political environs, telecom industry are examples
- Centralized generation, transmission & distribution (T&D) costs are increasing and will continue to increase

Distributed energy systems

- A more dynamic and flexible approach
- **Solar is the only fuel hedge available for DG in the U.S.**

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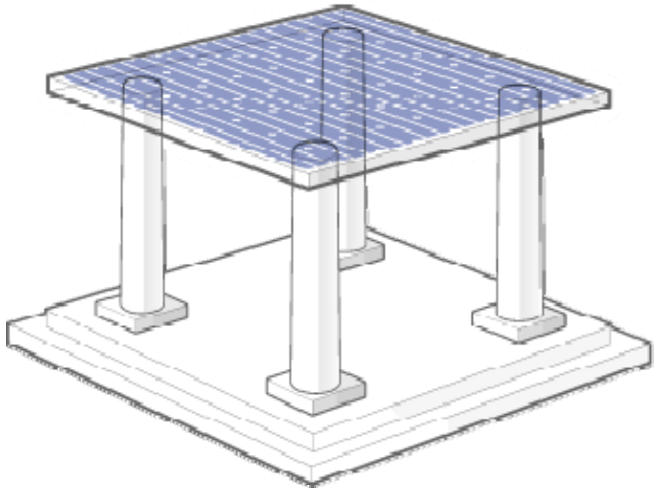
Requirements for Solar: The 4 Policy Pillars

- **Interconnection**
  - The right to connect (“plugging in”)
  - Allowed system sizes
  - Guidelines for interconnection (“type of plug”)
- **Net Metering**
  - The right to be paid for your generation
  - The conditions under which payment occurs
- **Utility rates & revenue policies**
  - Tariffs that do not penalize for production
- **Incentives**
  - Performance based
  - Market based
  - Tax based
  - Rebate based

The four pillars of cost-effective solar policy
(Solar Alliance)



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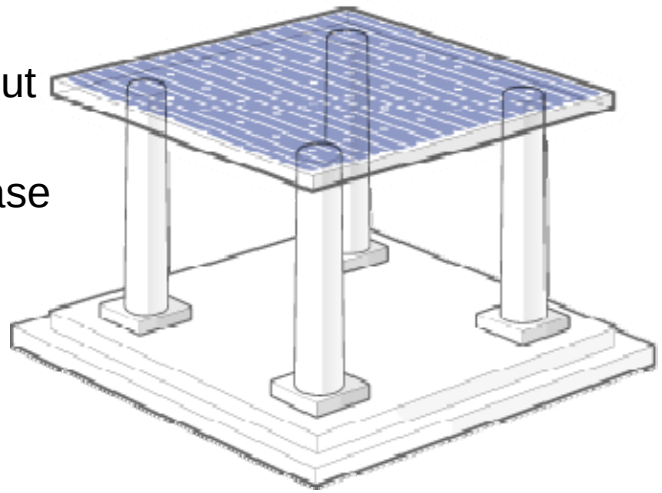
Policy Framework

- **Existing solar legislation**
  - California: Fixed budget, complex to administer
  - New Jersey: Performance-based incentives without long-term contracts
  - Maryland:
    - » 2% solar with max. 1% rate increase
    - » Performance based contract with mandatory 15 year commitment
    - » Legislatively mandated for utility companies to make little profit

The four pillars of cost-effective solar policy (Solar Alliance)



- **Utility rates & revenue policies**
  - Electricity rates can be structured to encourage energy saving measures
  - Some states structure rates to discourage energy savings (AZ as an example)
- **Net metering**
  - Positions clean, on-site power the same as efficiency
  - Attached to a rate tariff so that utilities cannot adjust tariff after installation
- **Interconnections**
  - FERC Order 2006 allows but limits systems to 2MW
  - Need simpler, standardized forms

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Building solar in your city

- Who has authority to make decisions?
- Identify current mandates for GHG or emission reduction
- Select properties for optimal solar output (site audit)
  - *Multiple facilities best*
  - *At least 50,000 sq. ft. unobstructed rooftop or adjacent land*
- Negotiate with current electricity provider
- Plan financing
- Set up / issue public RFI, RFQ, RFP
- Establish timeframe and budget
- Confirm/maintain public support

… ***Need help?***

San Diego's Alvarado Water Treatment Plant

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City Tour – “How To” go solar for cities

Aug 1 – Nov 4

10 – Tier 1 cities

10 – Tier 2 cities

30 – Tier 3 cities

50 Cities, go to scale

Visits to:

- **Democratic National Convention –** ***Denver, Aug. 24 - 28***
- **Republican National Convention –** ***St. Paul, Sept. 1 - 4***

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- **SOLAR 2008 – National Conference,** ***San Diego, Oct. 13 - 16***
- **Your city?**

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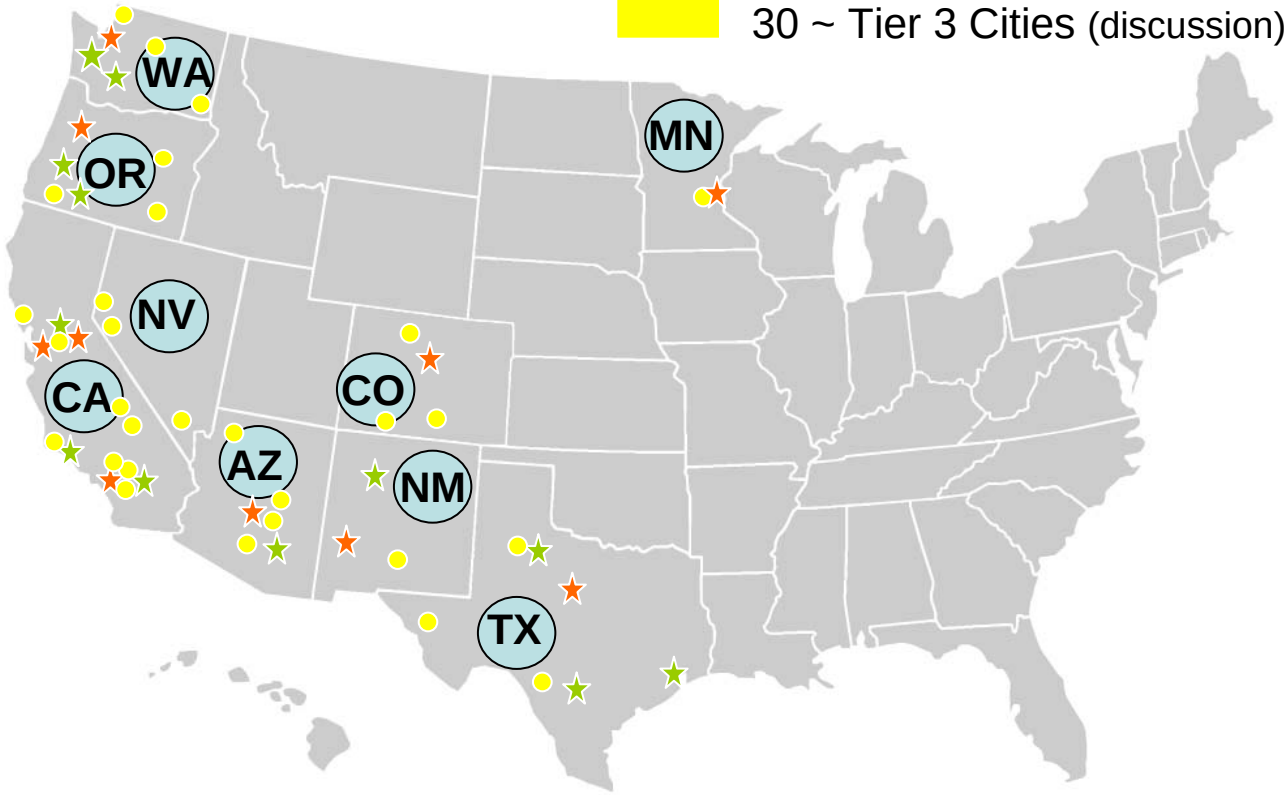
City Tour – Phase 1

50 Cities in 8 Western/SW states:

10 – Tier 1 cities (multiple discussions, exhibit opportunities)

10 – Tier 2 Cities (discuss, exhibit)

30 ~ Tier 3 Cities (discussion)



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